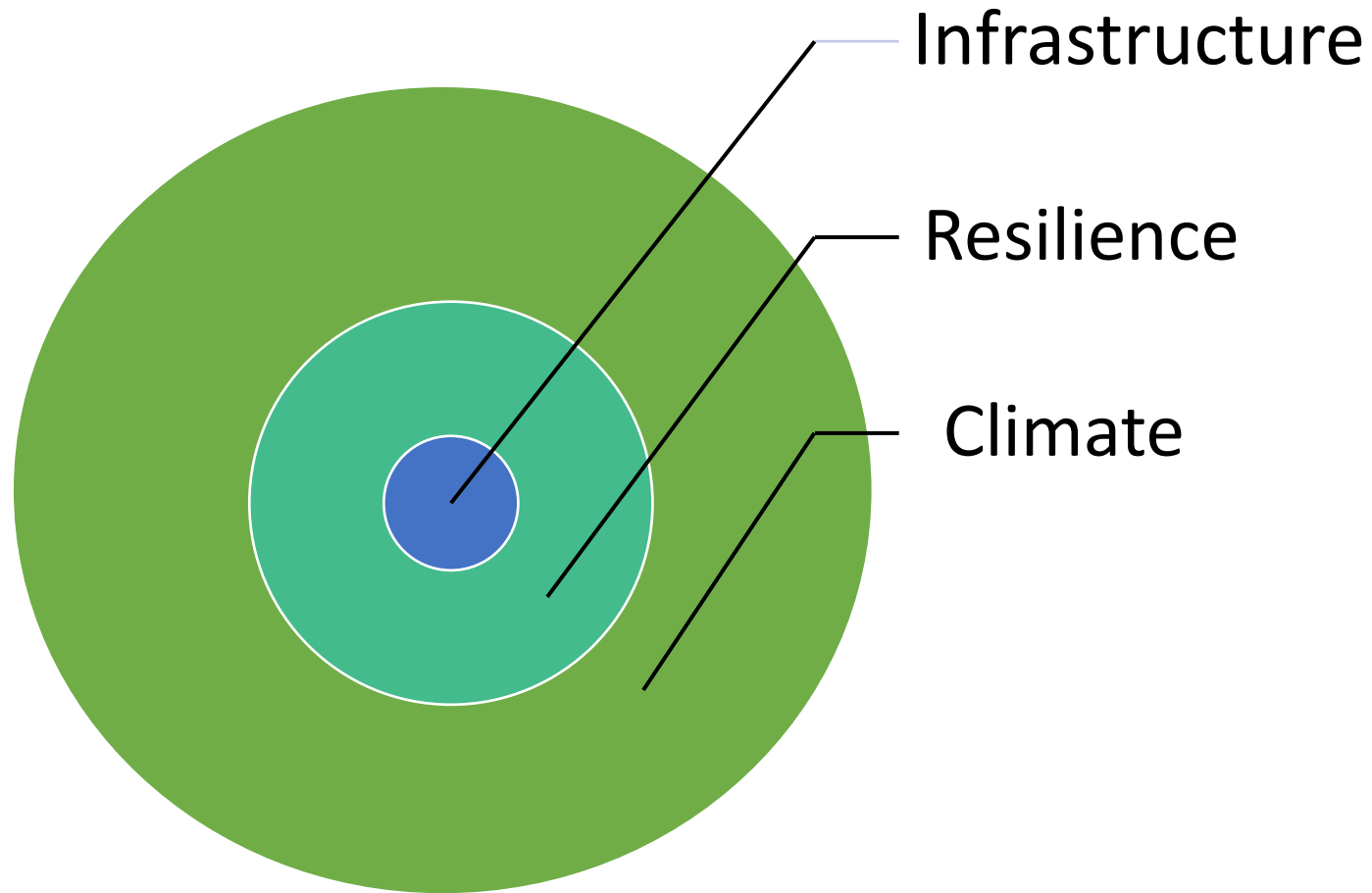
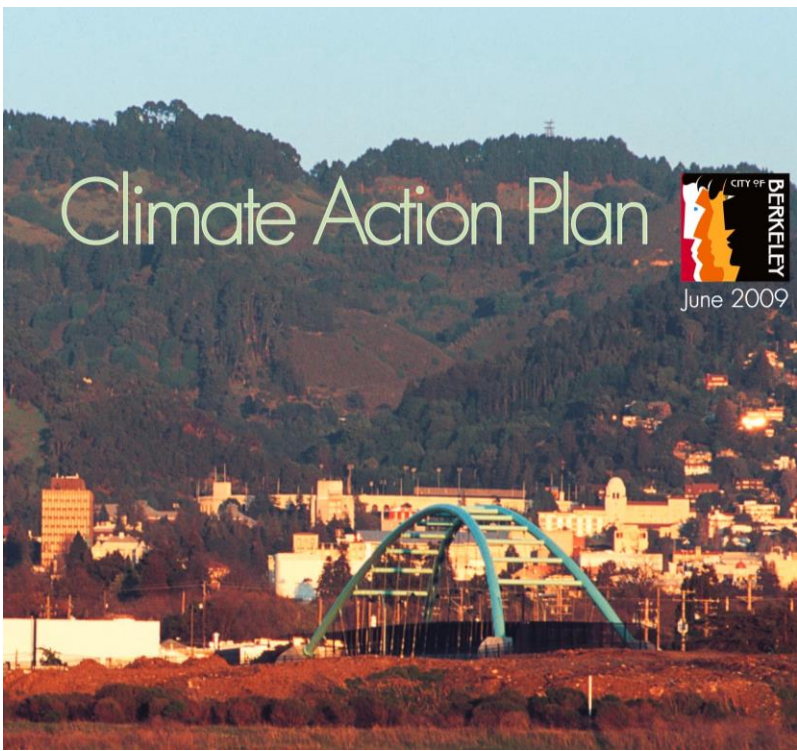


# Infrastructure2050:

## A Vision for a 21<sup>st</sup> Century City



John Gage & Gordon Wozniak  
ABAG: May 15, 2017



Category	Goal	Plan
Climate	Yes	Yes
Resilience	Yes	Yes
Infrastructure	No	No



# Berkeley Bond Measures

## voters like green & resilient Infrastructure bonds

### Branch Library Retrofits

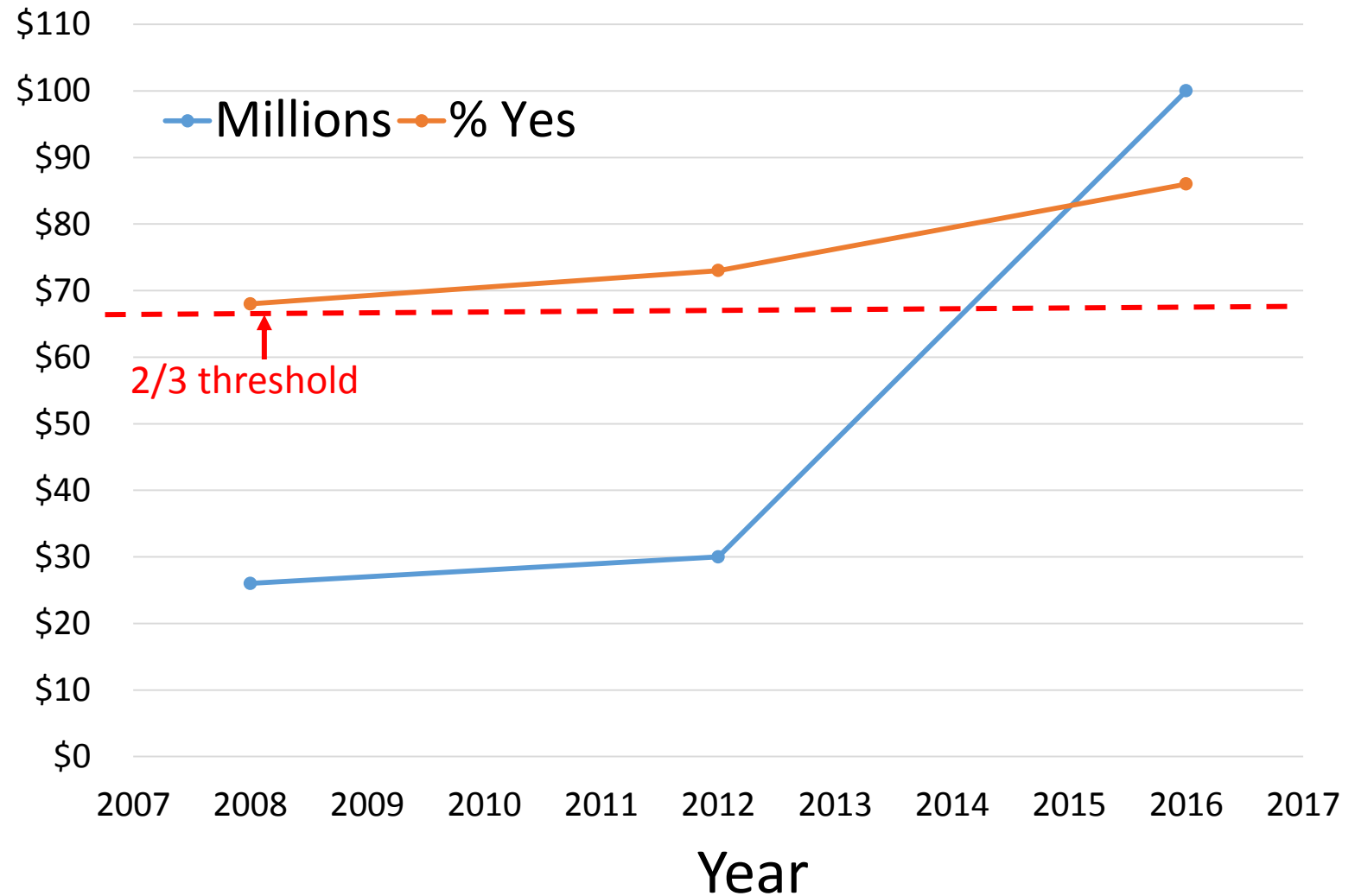
- \$26M -> 68%

### Streets & Watershed

- \$30M -> 73%

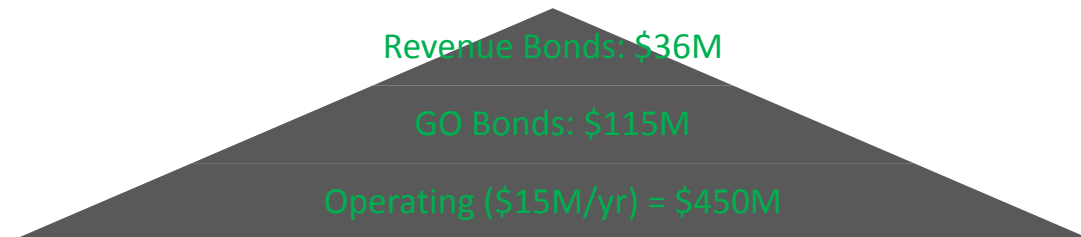
### Infrastructure & Facilities

- \$100M -> 86%

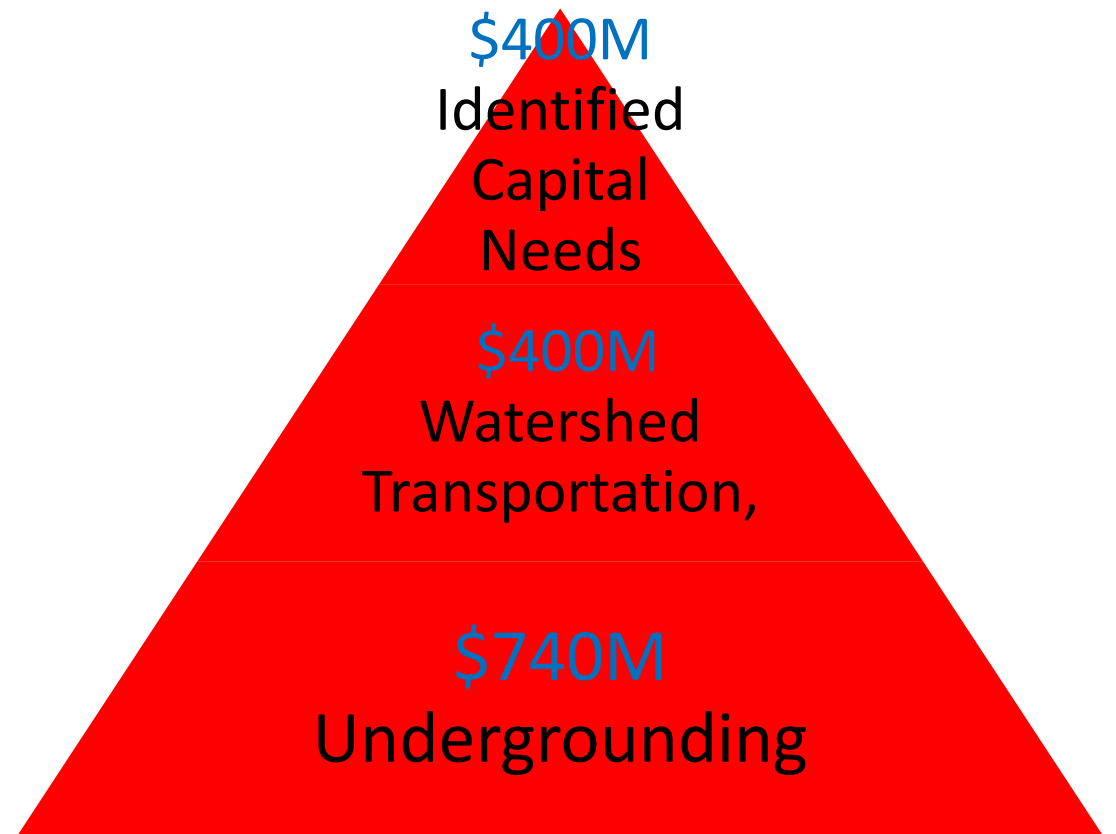


# Funding vs Needs Gap

## Capital Funding



## Infrastructure Capital Needs





# How Does Berkeley Finance Capital Projects?

## Bonds

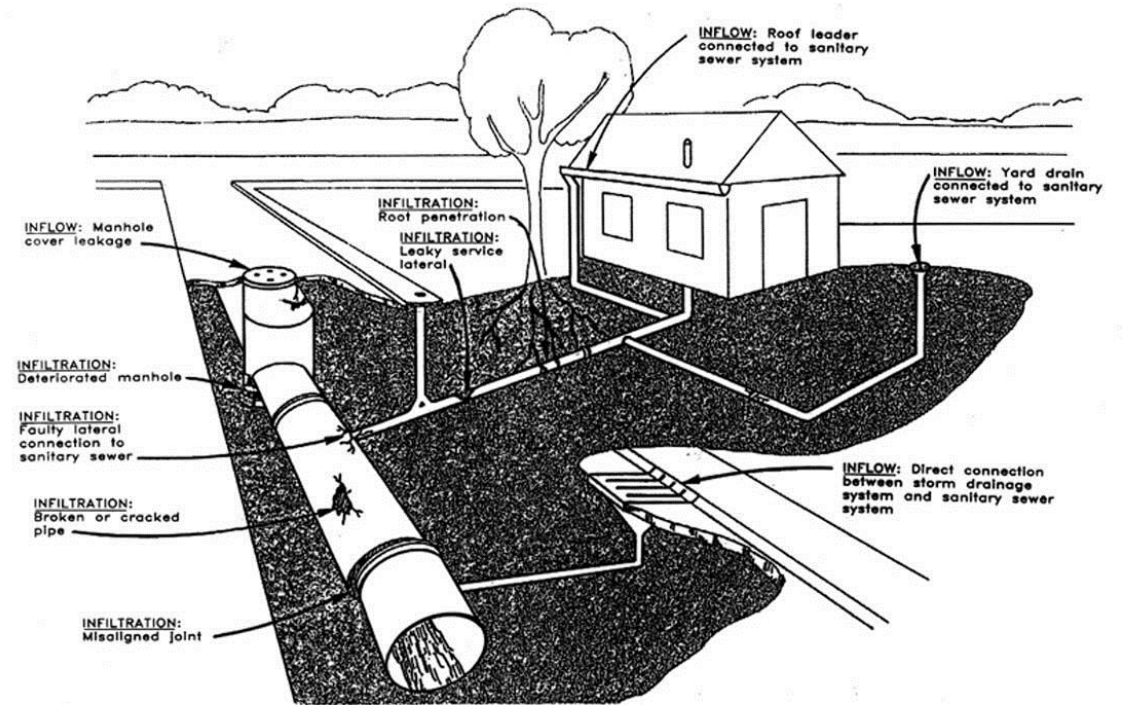
GO:  
Property  
tax



Revenue:  
Income  
stream



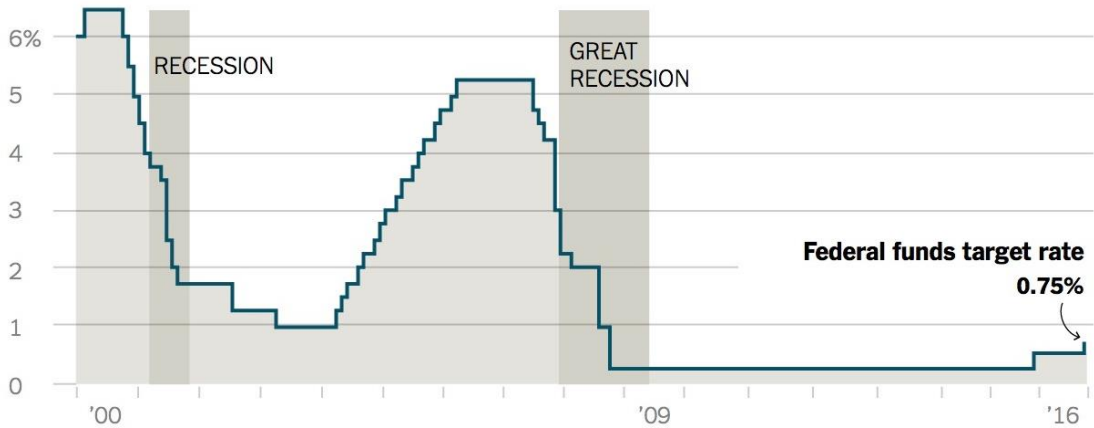
Operating Funds ~\$15M/yr



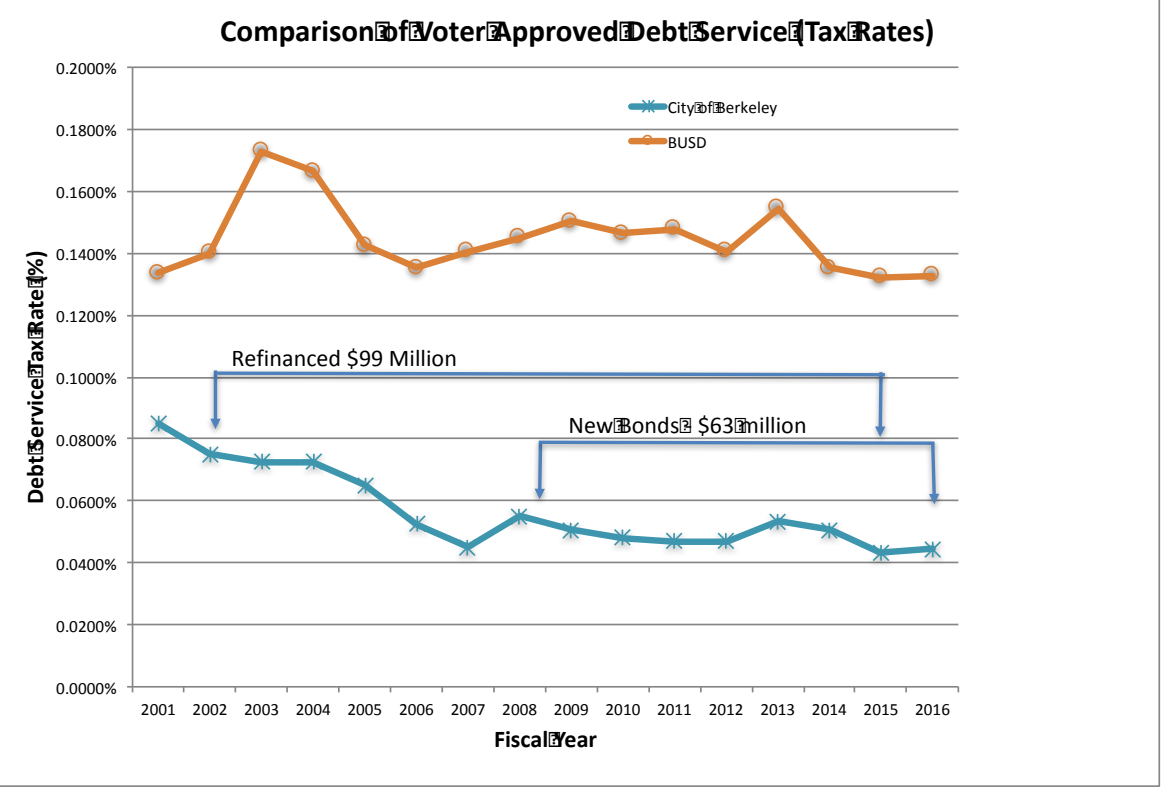
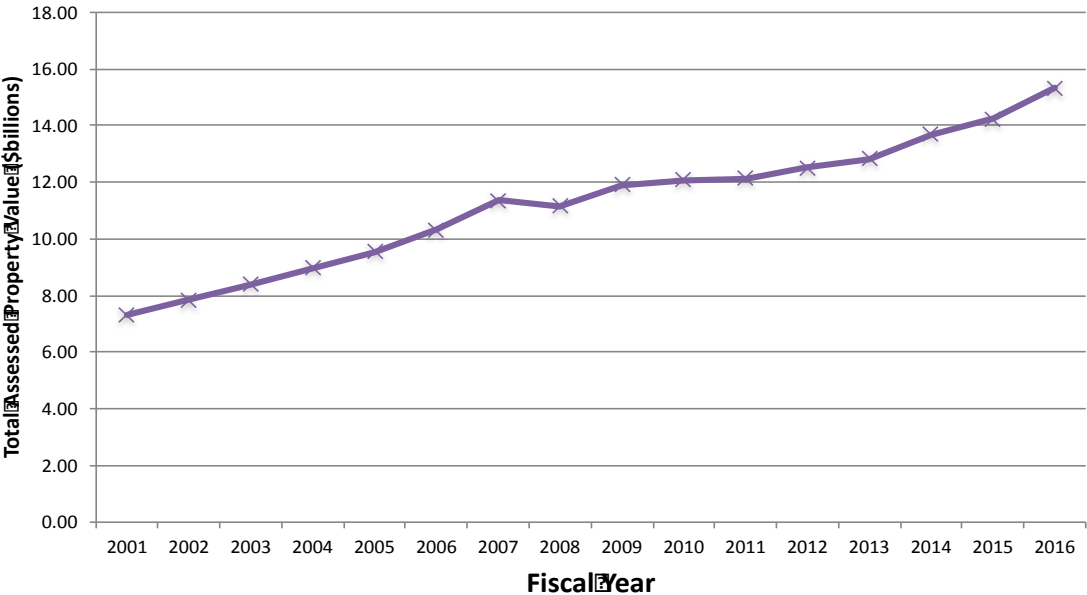
**SANITARY SEWER PROBLEMS**

# A Tale of Two Berkeleys: City vs School District

The Federal Reserve raised its target rate for only the second time in more than a decade.



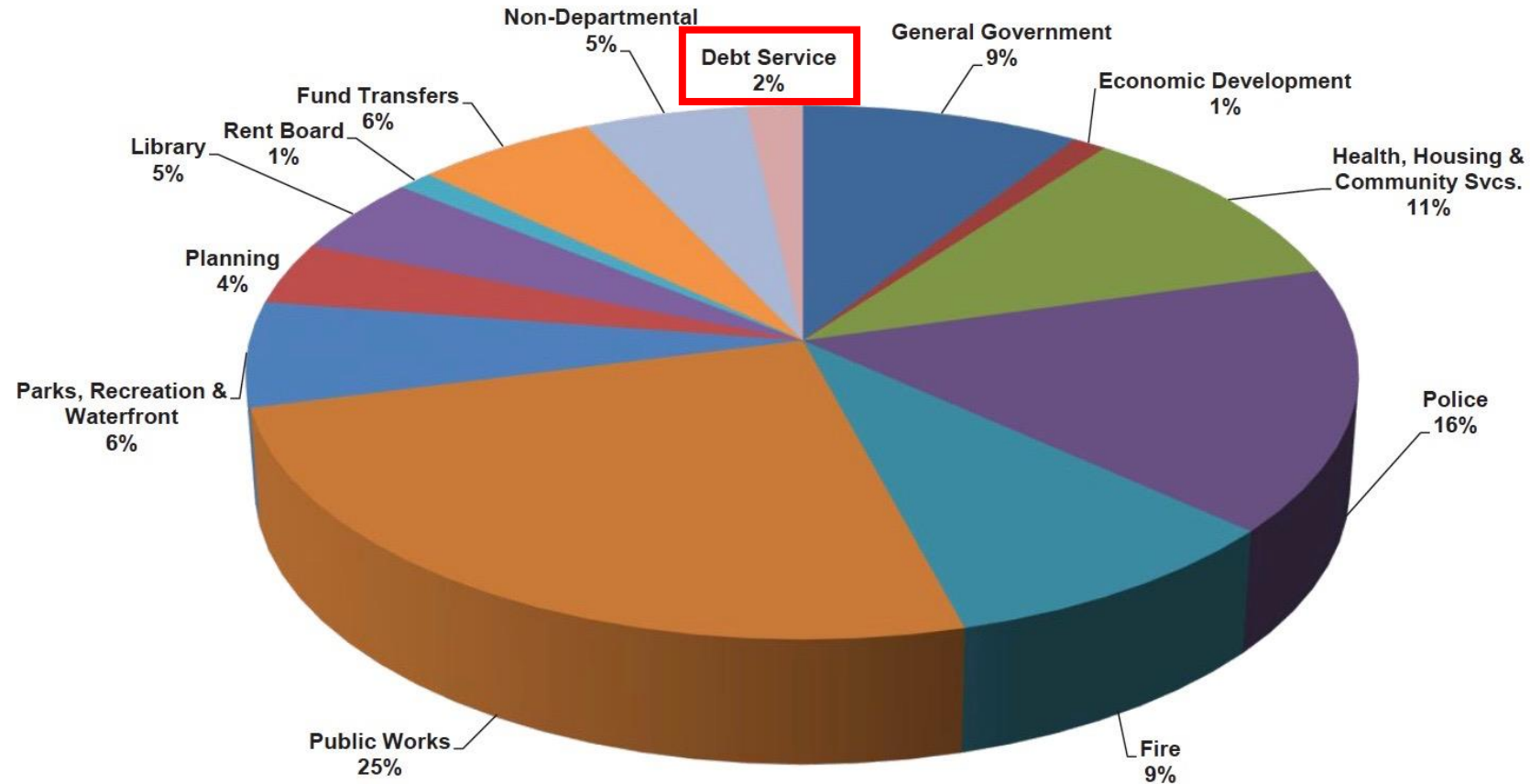
COB Assessed Property Values for FYs 2001-2016



Year	Countywide Property Tax based on AV (\$)	COB Tax Rate (%)	COB Tax Amount (\$)	BUSD Tax Rate (%)	BUSD Tax Amount (\$)
2000/1	\$5,369	0.0867%	\$465	0.1250%	\$671
2016/17	\$6,991	0.0445	\$311	0.1327%	\$927
% Change	+30.2%	-48.7%	-33.1%	+6.2%	+38.2%

# Berkeley Underbonded: Debt Service is 2% of Budget

**All Funds Expenditures by Department  
FY 2016 & FY 2017 Biennial Budget  
\$783,375,227 (Gross)  
\$673,572,076 (Net)**





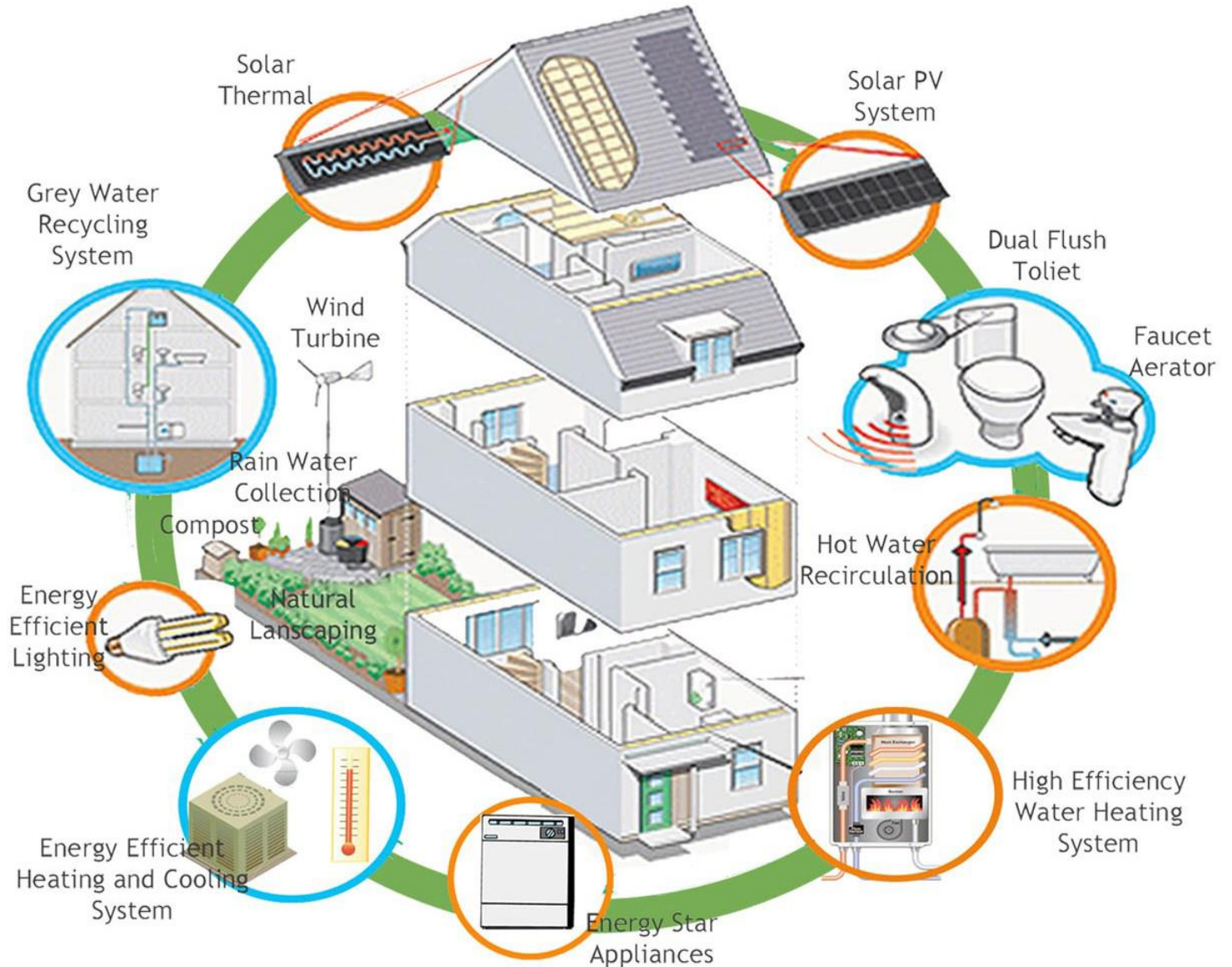
# Help New Homeowners make their property resilient

## 1992 Seismic Rebate

- >60% participation – very successful
- # participants declining

## 2018 Resilience Ballot Measure

- Broaden Rebate definition
- Seismic -> Resilience + Climate





# Green Revenue Bonds?

2014 – EPA Consent Decree requires COB

Reduce inflow and infiltration

Reduce sanitary sewer overflows

Repair and replace aging sewer pipelines

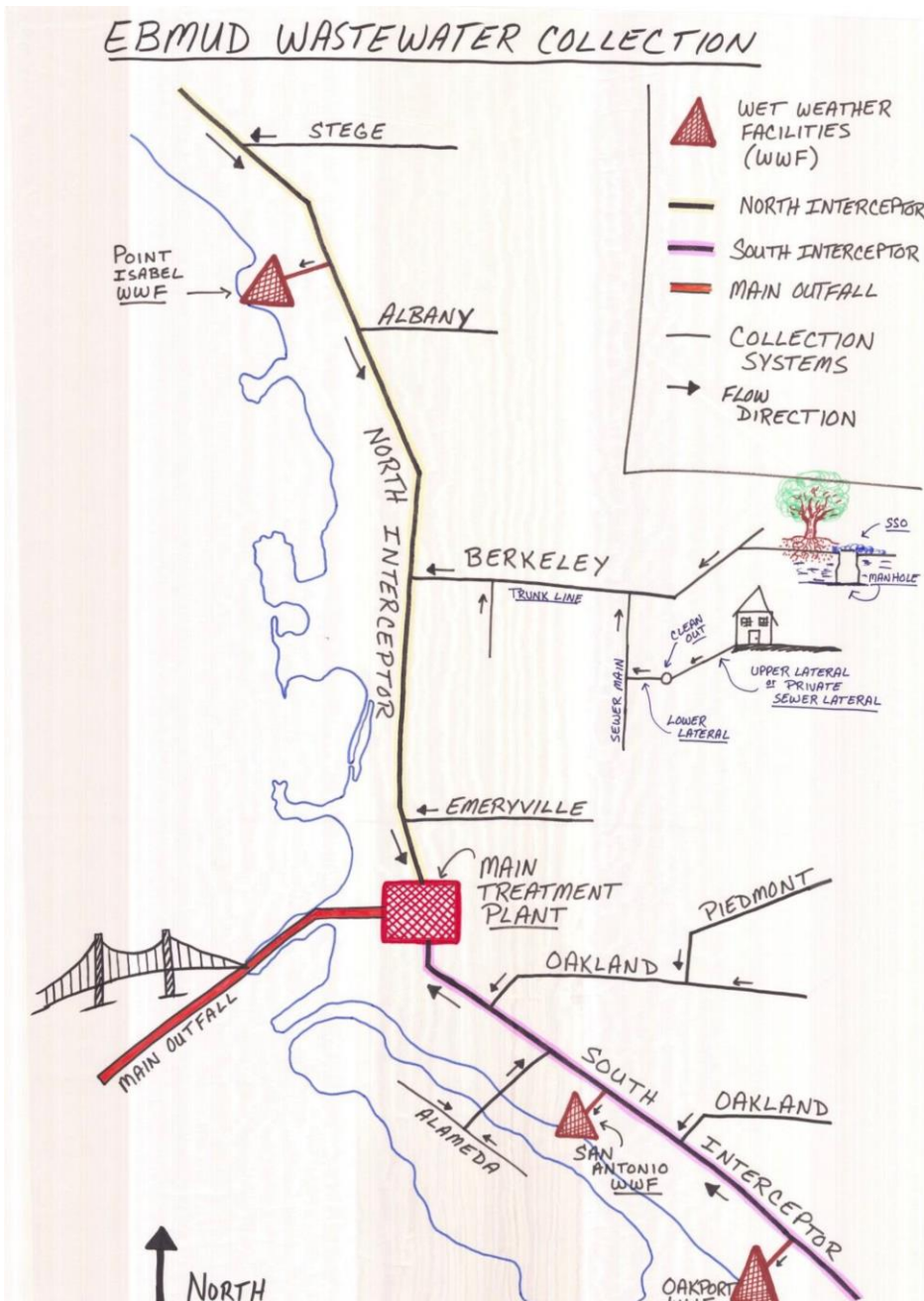
2026 - **\$100 million in capital improvements**

Replace 50 miles of sewer pipeline

1. Operating budget -> \$5M/yr
2. Insufficient funds!!

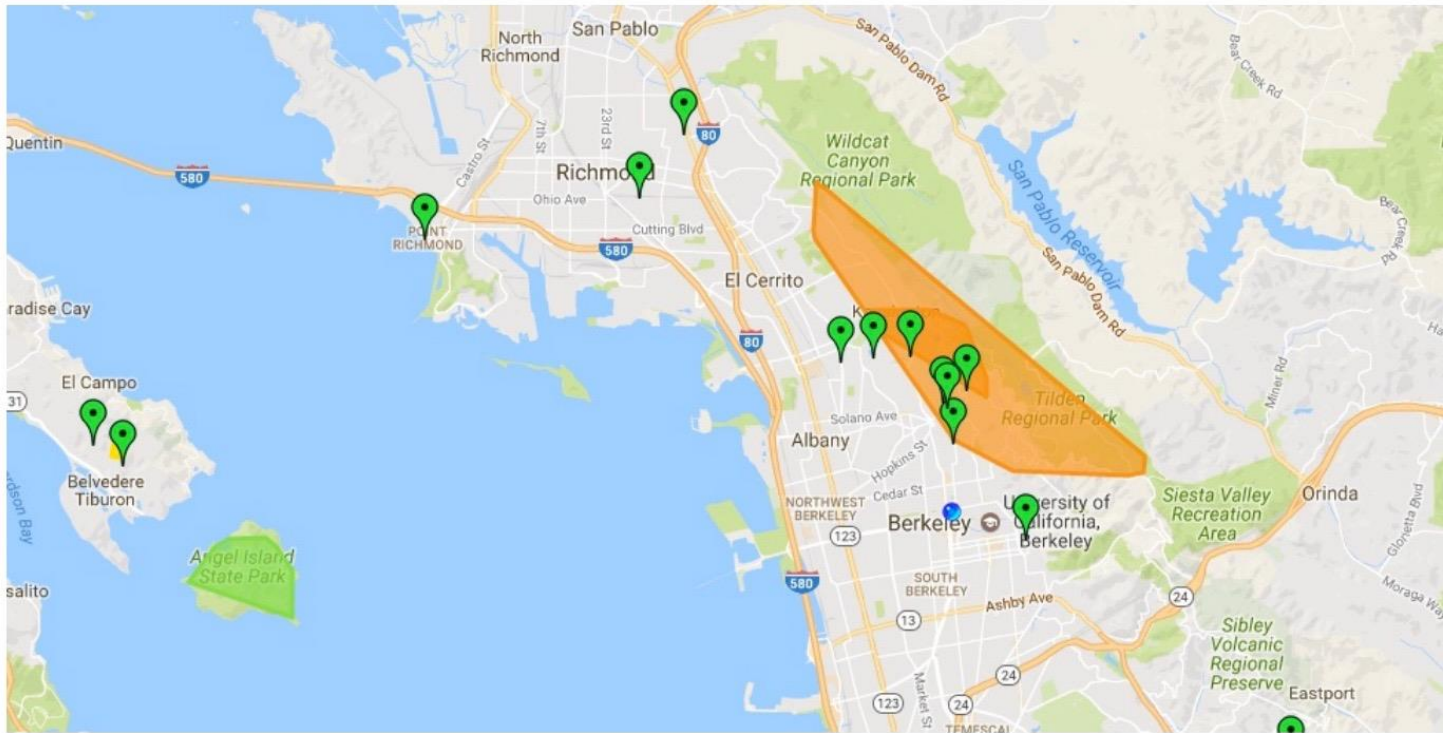
Green Bond - revenues from sewer fees

1. More efficient
  - a) Complete project faster
  - b) Less pollution



# Above Ground Utilities are Fragile

Update: At peak, 4,800 affected by Berkeley Hills power outage, now mostly resolved



The PG&E power outage map at around 1:50 p.m. Check the latest numbers on the [online PG&E outage map](#)

## Undergrounding Cost Estimate

Arterials/Collectors = \$135M

- Increase UUT from 7.5% to 10.0%
- Issue \$135M in Revenue Bonds

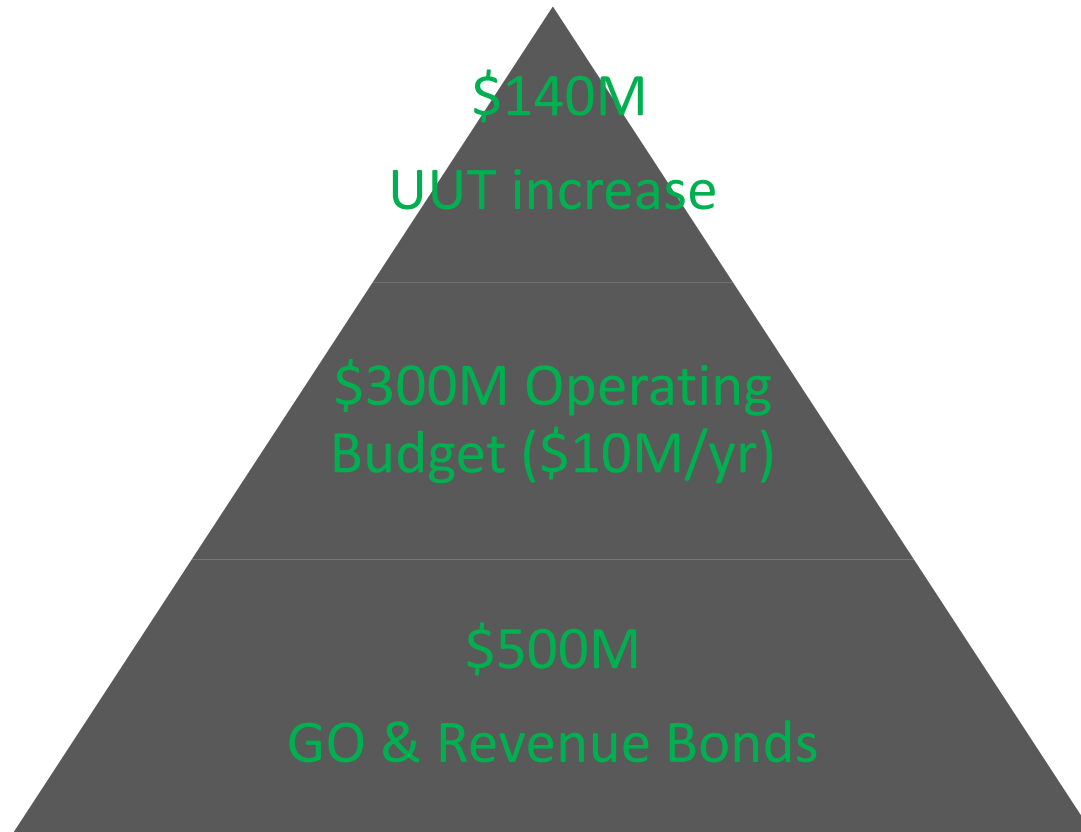
Residential streets = ~\$600M

- Dedicate 2.5% of current UUT
- Issue \$135M in Revenue Bonds

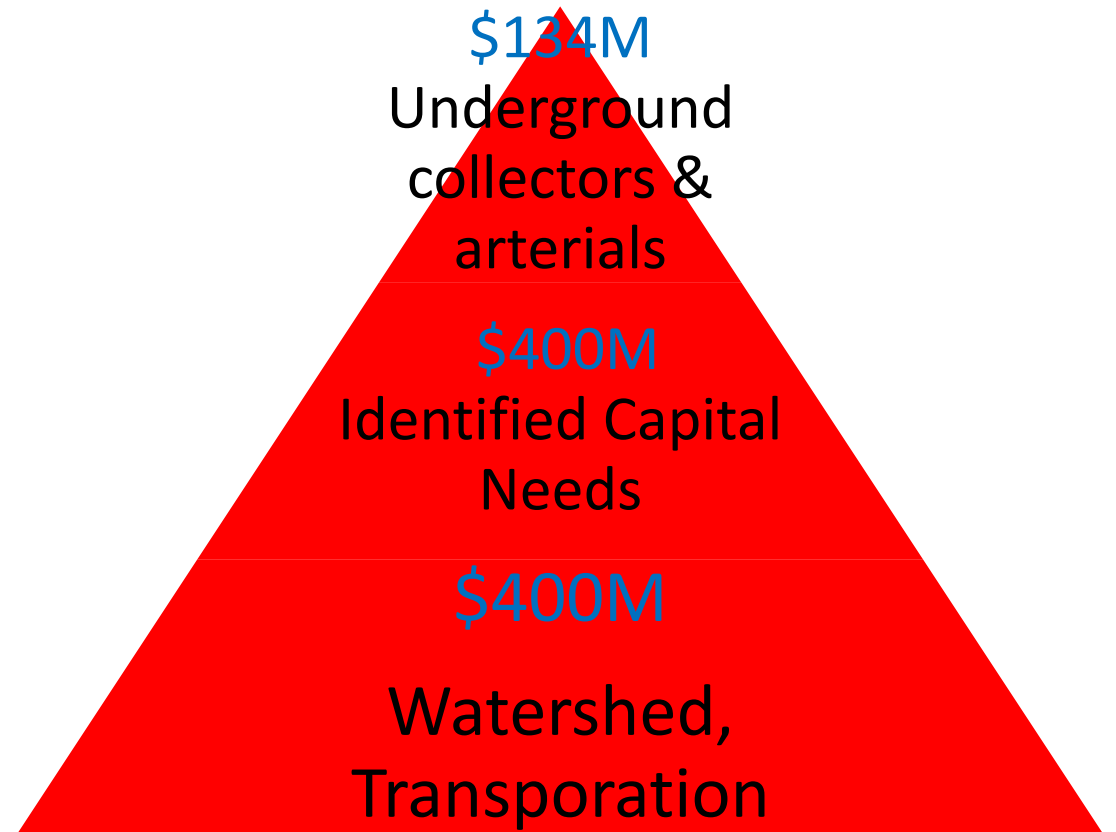
Gap = \$465M

# Infrastructure2050

## Capital Funding



## Infrastructure Capital Needs





# Infrastructure2050 -> Resilience

1. Modern infrastructure
  - More durable & less costly to maintain
  - More resilient
  - Greener
2. Modern infrastructure will improve Berkeley's resilience
  - Reduce recovery cost of a major disaster
3. Approach Insurers & Utilities to help fund modern infrastructure
  - E.g. solar, energy efficiency, and recycling programs

The End

# To Bond or Not to Bond?

## 10-year Treasury Yields

16%

12

8

4

0

1870

1885

1900

1915

1930

1945

1960

1975

1990

2005

2015

The Great Depression  
(1929-1934)

31 Years of Low Rates

32 Years of Low Rates

8 Years of Low Rates

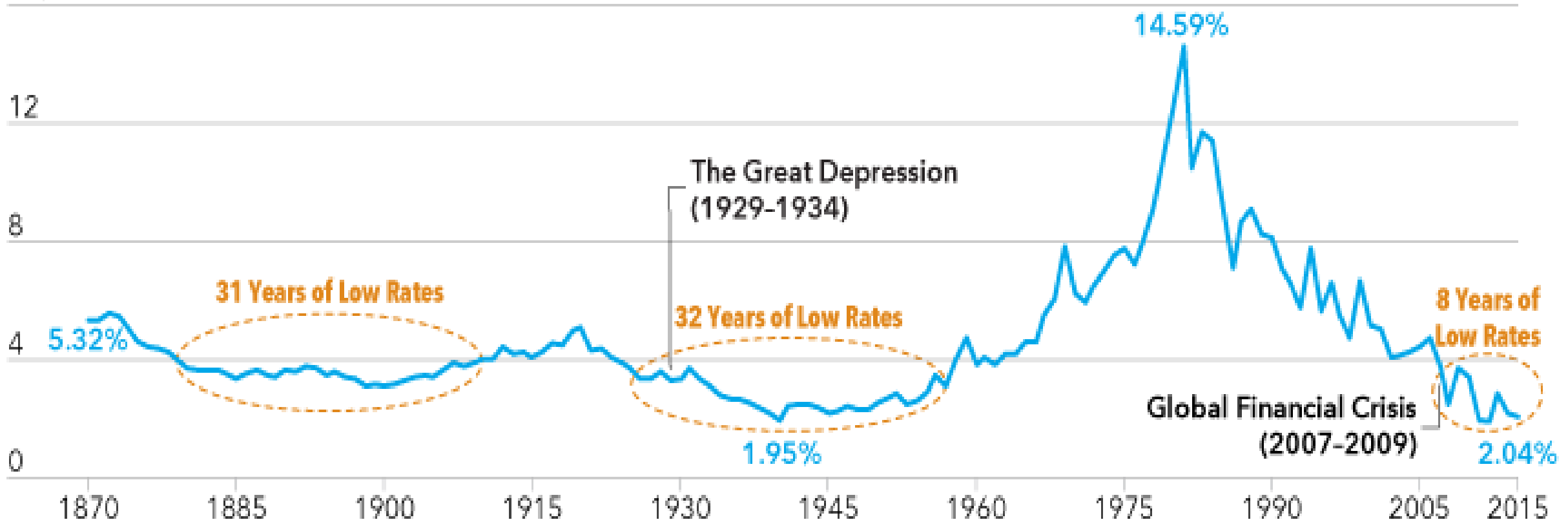
Global Financial Crisis  
(2007-2009)

5.32%

1.95%

14.59%

2.04%





# Collaborative Process

## Berkeley2050 GOAL:

- Create a 2050 VISION shared by all infrastructure planners, owners, and operators, public and private.

## Berkeley2050 vision process

- brings UC Berkeley and the City of Berkeley together in unprecedented way
- sharing capital infrastructure, intellectual leadership, professional and disciplinary world view, and a common service population.

## EBMUD, PG&E, BART, County of Alameda, City of Oakland, the State of California Energy Commission, the PUC, and the State Water Resources Control Board

- are tightly bound into this process.

## Many professional staff in each of these partners are UC Berkeley graduates

- share a deep interest in designing our future beyond institutional boundaries.

## ATT, Verizon, Comcast, Google Sidewalk Labs, Tarana, Autodesk, UC Statewide, and dozens of major contractors, design firms, and builders

- are part of this process.

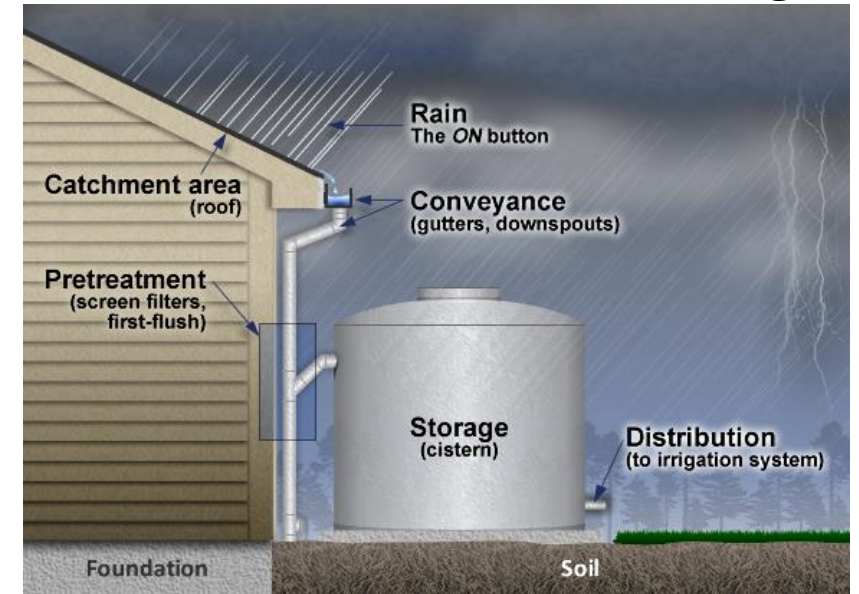
## Bay Area Council, Pacific Institute, Calthorpe Associates, Institute of Transportation, and other policy institutions

- are sources of inspiration

## Drought



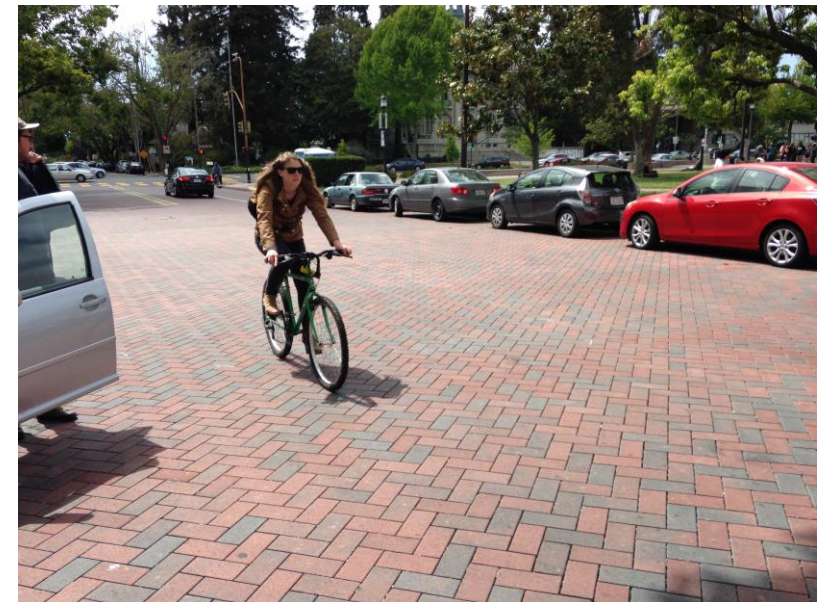
## Rainwater Harvesting



## Flooding



## Permeable Surfaces

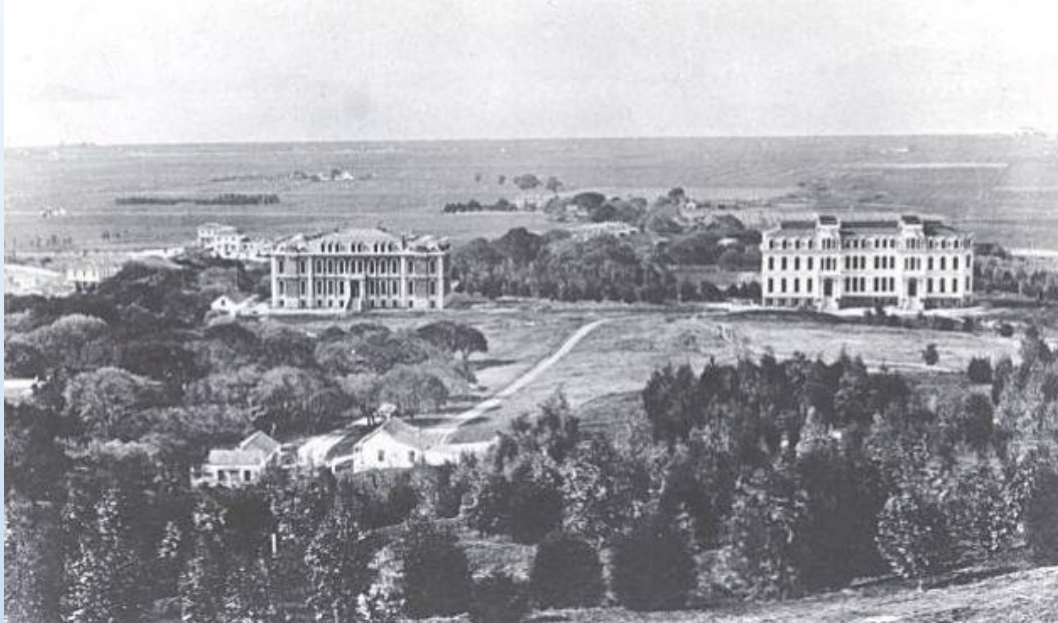




Early Days

# Berkeley

Late 20<sup>th</sup> Century



1900s

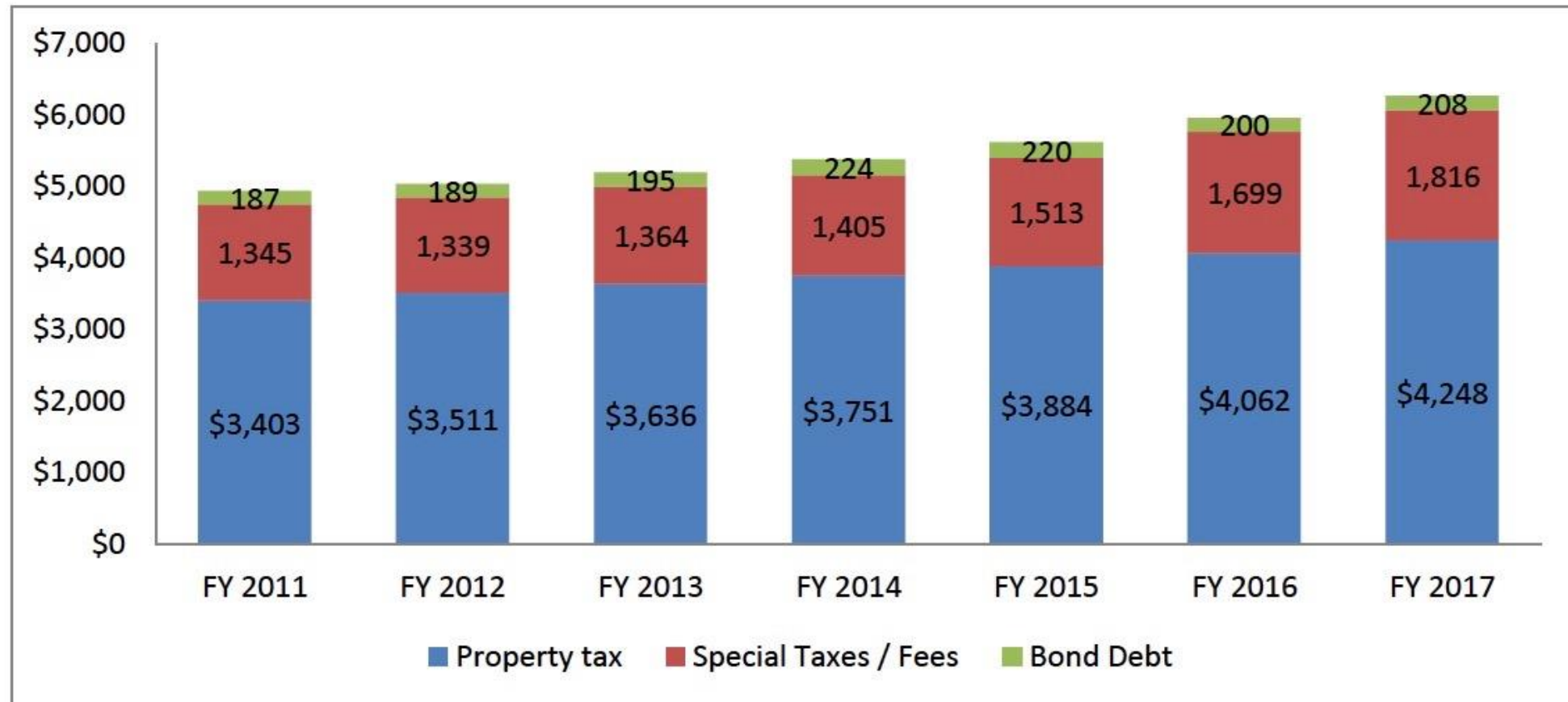


2050 Smart City





# Annual Berkeley Property Taxes: FYs2011 -17 (average assessed value – 1900 ft<sup>2</sup>)



# Infrastructure

## A Down Payment on the Future

### 1. Adopt goal for Infrastructure2050

- Modern
- Durable
- Green
- sustainable

### 2. Develop Vision for Infrastructure2050

- UCBerkeley
- Berkeley Lab
- City Commissions

### 3. Establish Planning Process

- Citizen involvement

# To Build a Modern Infrastructure Need Long-term Planning

<b>All Funds (in millions)</b>	<b>Adopted FY 2015</b>	<b>Adopted FY 2016</b>	<b>% Change</b>	<b>Adopted FY 2017</b>	<b>% Change</b>
Operating Budget	\$ 293.9	\$ 303.0	3%	\$ 301.6	2%
Capital Budget	\$ 29.5	\$ 36.1	22%	\$ 32.9	12%
<b>Total:</b>	<b>\$ 323.4</b>	<b>\$ 339.1</b>	<b>5%</b>	<b>\$ 334.5</b>	<b>3%</b>

FY2015 → FY2050





# Infrastructure2050: 30-Year-Capital Plan

## GO Bonds

- Assessed Values: doubling time ~15 yrs (30yrs = 4x)
- Ask Voter to set Debt-Service Rate at FY2000 value of (x2)

## Green Revenue Bonds (GR)

- Use operating revenue streams, used for capital projects, to issue GR bonds (x5)

## UUT increase by 2.5% to 10%

- Use \$4.7M increase to fund revenue bonds for undergrounding collectors & arterials
- Dedicate 1/3 of current UUT to undergrounding residential streets
- Ask Utility & Insurance Companies to subsidize residential undergrounding

## Property Transfer Tax

- Broaden Seismic Exemption to include resilience and climate

## Partnerships

- EBMUD, Utilities, Insurance Companies

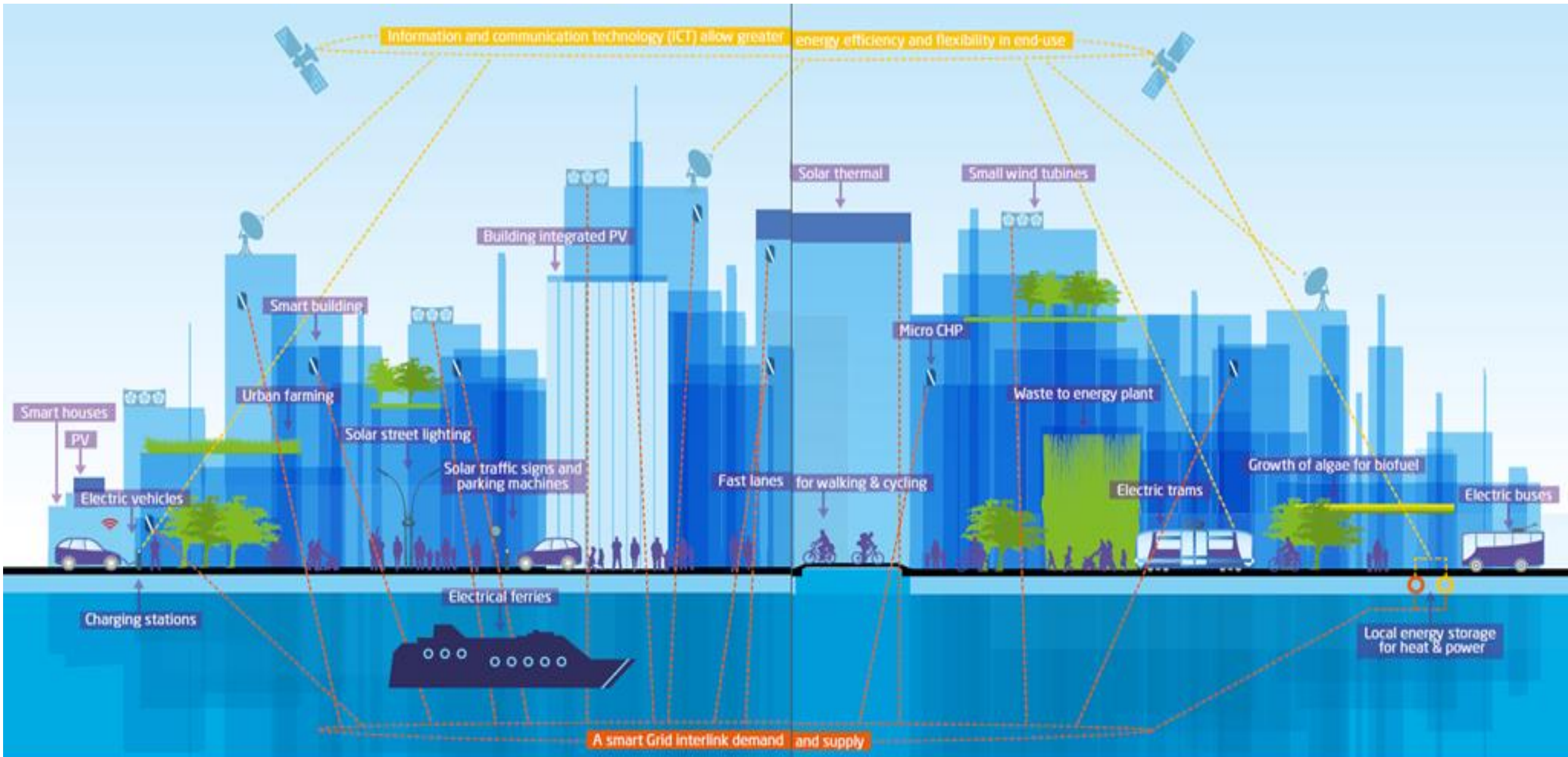
# Berkeley, Sewage and San Francisco Bay



Berkeley and other East Bay cities have reached a settlement with the EPA to upgrade their sewer lines, which should prevent raw sewage from spilling into the bay during storms. Photo: dogefrost



# Berkeley2050: A Smart City



# Capital Project: Sewer Pipeline Replacement

## EPA Settlement

- Mandates 4.2 mi/y = \$8.4 million

## Operating Budget

- ~5M/yr → 2.5 miles of pipeline replacement
- **Shortfall = \$3.4 M/yr**

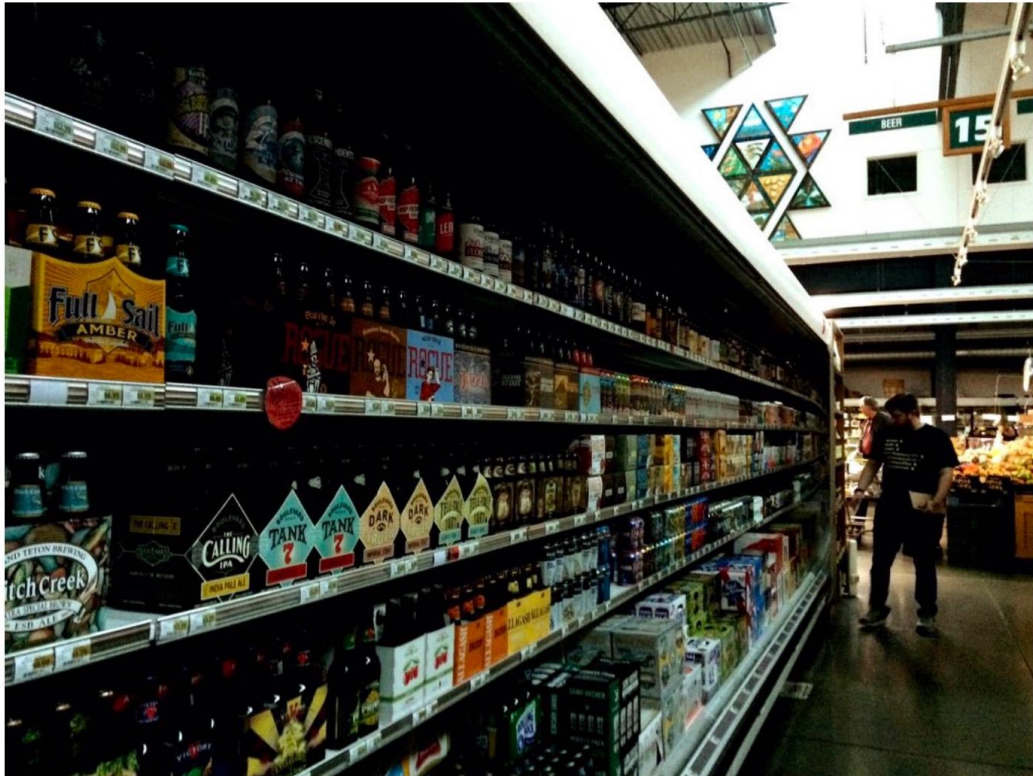
## Two Options

- Continue to Raise sewer fees
  1. FY2016 -> FY2020 = **+131%**
- **\$100M Green bond?**
  1. Complete project faster
  2. Less pollution



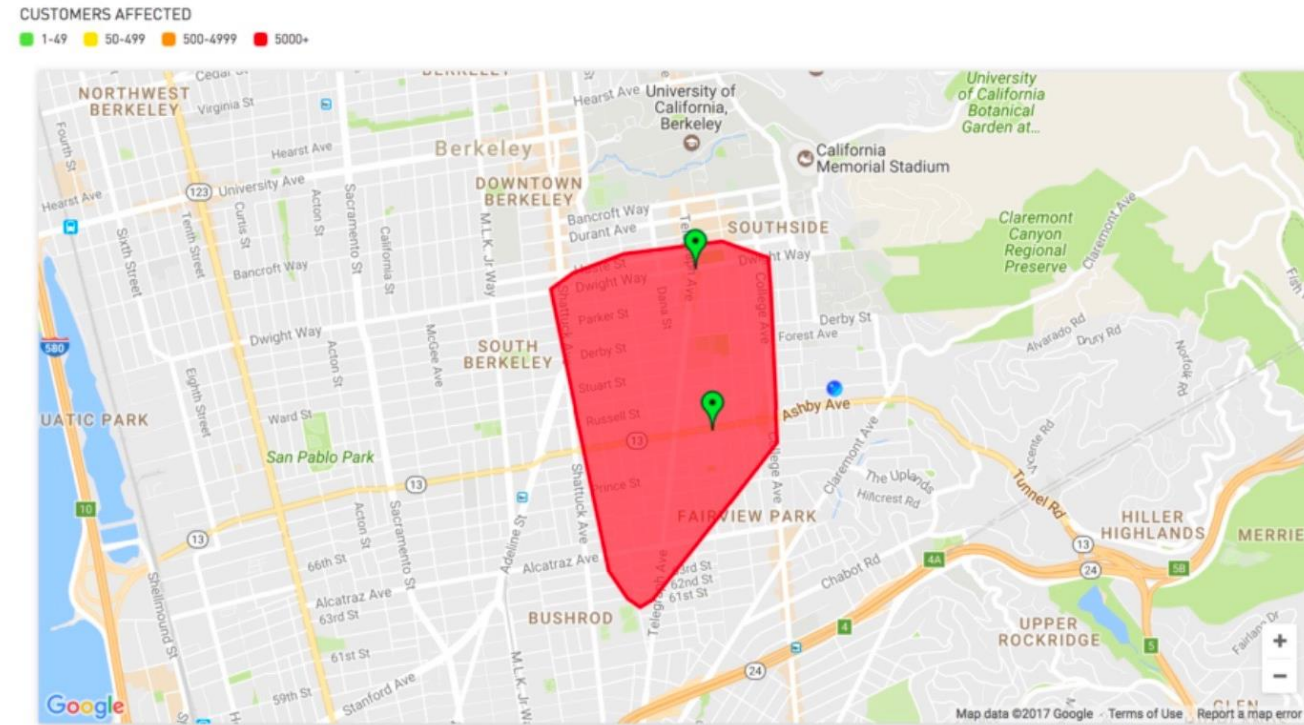
# Above Ground Utilities are Fragile

## Breaking: Power outages affect large swaths of Berkeley



The power outage hit Berkeley Bowl West. Photo: Guillaume Pierre

**Update 4:28 p.m.** Despite what PG&E has told Berkeleyside, readers are saying their power is still out. According to the outage map, there are 18 outages still reported in Berkeley that are impacting 8,160 customers.



At 9:45 p.m., PG&E's outage map was showing over 5,000 customers affected in an area stretching from the south campus neighborhood into North Oakland